

**What is claimed is:**

1. A polypeptide comprising an engineered PDZ domain, wherein said engineered PDZ domain binds to a target associated with a pathogen or disease state.
2. The polypeptide of claim 1 wherein said pathogen is viral, fungal, or bacterial.
3. The polypeptide of claim 1 wherein said pathogen is *Bacillus anthracis* or *Clostridium botulinum*.
4. The polypeptide of claim 1 wherein said target is protein BclA of *Bacillus anthracis* or a fragment thereof.
5. The polypeptide of claim 1 wherein said target is a polypeptide having a C-terminal sequence of EFYA.
6. The polypeptide of claim 1 wherein said PDZ domain is evolved.
7. The polypeptide of claim 6 wherein said polypeptide binds to said target with a dissociation constant ( $K_d$ ) of about 100 nM or lower.
8. The polypeptide of claim 7 wherein said polypeptide binds to said target with a dissociation constant of about 15 nM or lower.
9. The polypeptide of claim 1 further comprising a reporter group.
10. The polypeptide of claim 1 further comprising an effector domain.
11. The polypeptide of claim 1 further comprising a radioactive isotope.
12. The polypeptide of claim 1 wherein said polypeptide is isolated.
13. A polynucleotide encoding the polypeptide of claim 1.
14. A vector comprising the polynucleotide of claim 12.
15. A host cell comprising the polynucleotide of claim 12.

16. An isolated antibody that binds to said polypeptide of claim 1.
17. A method of detecting the presence of a pathogen or disease in a patient comprising:
  - a) administering a polypeptide of claim 1 to said patient; and
  - b) detecting binding of said polypeptide in said patient.
18. A method of detecting the presence of a pathogen or disease in a sample comprising:
  - a) contacting a polypeptide of claim 1 with said sample; and
  - b) detecting binding of said polypeptide to said sample.
19. A method of preparing a polypeptide comprising a PDZ domain, wherein said PDZ domain binds to a target produced by a pathogen or disease state, comprising:
  - a) creating a library of polypeptides from one or more parent polypeptides comprising a PDZ domain;
  - b) identifying one or more polypeptides from said library having binding affinity for said target.
20. A method of treating a disease, comprising administering to a patient afflicted with or likely to be afflicted with said disease a therapeutically effective amount of a polypeptide comprising a PDZ domain capable of binding to a target associated with said disease.
21. The method of claim 20 wherein said disease is associated with a pathogen.
22. The method of claim 21 wherein said pathogen is *Bacillus anthracis*, *Clostridium botulinum* or *Clostridium tetani*.
23. A method of preparing a polypeptide comprising a PDZ domain, wherein said PDZ domain binds to a polypeptide target associated with a pathogen, comprising:
  - a) forming a library of polypeptides from one or more parent polypeptides comprising a PDZ domain;
  - b) selecting a first polypeptide from said library, said first polypeptide having binding affinity to an intermediate target having 20% to 80% sequence identity in the last 5 amino acids with the last 5 amino acids of said target;
  - c) creating a further library of polypeptides from the first polypeptide of step b);
  - d) repeating steps b) and c) until a polypeptide that binds with said target is identified.